

What Is Claimed Is:

1. A bulk paper feeding device with an intermediate conveyor, comprising:

5           a carrier capable of carrying a large quantity of paper;

              a paper feeding mechanism for picking up and feeding one sheet at a time of the paper from the carrier; and

10          an intermediate conveyor for transporting a sheet of paper fed from the feeding mechanism to a main paper feeding table of a paper feeder on the body of an image forming device or to the vicinity of a paper feeding port that faces main paper feeding means of the paper feeder, said intermediate conveyor comprising paper transport means for transporting paper that has been fed from the paper feeding mechanism, disposed in a plurality at prescribed intervals from upstream to downstream along the intermediate transport path thereof; and paper detecting means for detecting at least one edge from among the leading and trailing edges of the paper being transported, disposed in a plurality at intervals from upstream to downstream along the intermediate transport path.

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2. The bulk paper feeding device with an intermediate conveyor as claimed in claim 1, further comprising control means for performing control in which the paper size is identified and the paper  
5 transport control system of each paper transport means is varied on the basis of signals from the plurality of paper detecting means when initialization is performed upon completion of transport of a single sheet of paper onto the plurality of paper detecting  
10 means.

3. The bulk paper feeding device with an intermediate conveyor as claimed in claim 2, wherein the paper in the initialized state is positioned on the paper transport means disposed on the furthest downstream side of the intermediate transport path, and the leading edge of the paper is set in a position  
15 in which the paper can be fed by the main paper feeding means.

4. The bulk paper feeding device with an intermediate conveyor as claimed in claim 2, further comprising timekeeping means for measuring the time between the paper detecting means when the trailing edge of the paper moves at the time that transport of paper on the plurality of paper detecting means is  
20 started in accordance with the start of paper feed by  
25

the main paper feeding means, wherein the control means adds a signal from the timekeeping means and controls the paper transport speed of each paper transport means.

5       5. The bulk paper feeding device with an intermediate conveyor as claimed in claim 2, further comprising transport speed detecting means for detecting the paper transport speed, wherein the control means adds a signal from the transport speed detecting means and controls the paper transport speed of each paper transport means in a stepless manner and in real time.

10      6. The bulk paper feeding device with an intermediate conveyor as claimed in claim 1, further comprising at least one drive means for driving each of the paper transport means mounted in the intermediate conveyor, and control means for controlling the drive means such that the paper size is identified and the paper transport control system of each paper transport means is switched on the basis of signals from the plurality of paper detecting means.

15      7. The bulk paper feeding device with an intermediate conveyor as claimed in claim 6, wherein the drive means is a stepping motor.

8. The bulk paper feeding device with an intermediate conveyor as claimed in claim 1, wherein at least three paper transport means are disposed.

9. The bulk paper feeding device with an intermediate conveyor as claimed in claim 1, wherein the image forming device is a stencil printer which has a printing drum for winding a thermal stencil master produced by engraving, and whereby paper that has been fed from the intermediate conveyor is pressed against the thermal stencil master on the printing drum and printed by the feeding of ink from the interior of the printing drum.

10. A method for feeding paper by using a bulk paper feeding device with an intermediate conveyor comprising a carrier capable of carrying a large quantity of paper; a paper feeding mechanism for picking up and feeding one sheet at a time of the paper from the carrier; and an intermediate conveyor for transporting a sheet of paper fed from the feeding mechanism to a main paper feeding table of a paper feeder on the body of an image forming device or to the vicinity of a paper feeding port that faces main paper feeding means of the paper feeder, wherein sequential transport can be accomplished without the trailing edge of the front sheet coming into contact

with the leading edge of the subsequent sheet in the paper feeding means or the vicinity of the paper feeding port even when there is no electrical connection with the body of the image forming device,  
5 by detecting and identifying the size and transport speed of the paper being transported by the intermediate conveyor.

11. A bulk paper feeding device with an intermediate conveyor, comprising:

10 a carrier capable of carrying a large quantity of paper;

a paper feeding mechanism for picking up and feeding one sheet at a time of the paper from the carrier; and

15 an intermediate conveyor for transporting a sheet of paper fed from the feeding mechanism to a main paper feeding table of a paper feeder on the body of an image-forming device or to the vicinity of a paper feeding port that faces main paper feeding means of  
20 the paper feeder,

said intermediate conveyor comprising paper transport means for transporting paper that has been fed from the paper feeding mechanism, a pair of guiding means for guiding paper that is transported by  
25 the paper transport means to the main paper feeding

table or to the vicinity of the paper feeding port, and a chassis for accommodating the paper transport means and the pair of guiding means.

12. The bulk paper feeding device with an  
5 intermediate conveyor as claimed in claim 11, wherein  
the paper transport means comprises a plurality of  
roller pairs composed of transport rollers disposed at  
intervals from upstream to downstream along the  
intermediate transport path and pressing rollers for  
10 pressing thereagainst, and at least one drive means  
for driving the transport rollers.

13. The bulk paper feeding device with an  
intermediate conveyor as claimed in claim 12, wherein  
the drive means is a stepping motor.

15 14. The bulk paper feeding device with an  
intermediate conveyor as claimed in claim 12, wherein  
the main paper feeding means comprises a main paper  
feeding roller for feeding the paper on the main  
feeding table, and wherein the transport roller from  
20 among the plurality of transport rollers that is  
disposed on the furthest downstream side of the  
intermediate transport path occupies a position in  
which pressure contact can be established with the  
main paper feeding roller.

15. The bulk paper feeding device with an intermediate conveyor as claimed in claim 12, further comprising unidirectional rotational driving force transmitting means provided to the shaft of the  
5 transport roller disposed at least on the furthest downstream side of the intermediate transport path.

16. The bulk paper feeding device with an intermediate conveyor as claimed in claim 15, further comprising braking force applying means for applying  
10 braking force to the transport roller disposed at least on the furthest downstream side of the intermediate transport path.

17. The bulk paper feeding device with an intermediate conveyor as claimed in claim 16, wherein  
15 the braking force is applied to the shaft of the transport roller or to the transport roller itself on the side to which rotational driving force is transmitted via the unidirectional rotational driving force transmitting means.

20 18. The bulk paper feeding device with an intermediate conveyor as claimed in claim 16, wherein the braking force is set to a level that increases toward the main paper feeding means.

25 19. The bulk paper feeding device with an intermediate conveyor as claimed in claim 11, wherein

the pair of guiding means comprises an upper guiding member and a lower guiding member disposed opposite thereto, wherein at least one member from among the upper guiding member and the lower guiding member 5 extends to the main feeding table or to the vicinity of the paper feeding port.

20. The bulk paper feeding device with an intermediate conveyor as claimed in claim 19, further comprising paper detecting means for detecting at 10 least one edge from among the leading and trailing edges of the paper being transported, provided to either one of the upper guiding member and the lower guiding member, wherein the paper detecting means are disposed in a plurality at intervals from upstream to 15 downstream along the intermediate transport path.

21. The bulk paper feeding device with an intermediate conveyor as claimed in claim 11, wherein the paper transport means comprises a plurality of roller pairs disposed at intervals from upstream to 20 downstream along the intermediate transport path, and composed of transport rollers and pressing rollers for pressing thereagainst; wherein the pair of guiding means comprises an upper guiding member and a lower guiding member disposed opposite thereto; and wherein 25 either one of the transport rollers and pressing

rollers is disposed on either one of the upper guiding member and lower guiding member.

22. The bulk paper feeding device with an intermediate conveyor as claimed in claim 21, further comprising a biasing member provided to either of the upper guiding member and lower guiding member, for biasing the pressing rollers in the direction in which the pressing rollers are pressed against the transport rollers.

10 23. The bulk paper feeding device with an intermediate conveyor as claimed in claim 21, wherein portions of the transport rollers designed to face the paper transport path protrude from the lower guiding member.

15 24. The bulk paper feeding device with an intermediate conveyor as claimed in claim 21, wherein the main paper feeding means comprises a main paper feeding roller for feeding the paper on the main feeding table, and wherein the transport roller from 20 among the plurality of transport rollers that is disposed on the furthest downstream side of the intermediate transport path occupies a position in which pressure contact can be established with the main paper feeding roller.

25. The bulk paper feeding device with an intermediate conveyor as claimed in claim 21, further comprising paper detecting means for detecting at least one edge from among the leading and trailing edges of the paper being transported, provided to either one of the upper guiding member and the lower guiding member, wherein the paper detecting means are disposed in a plurality at intervals from upstream to downstream along the intermediate transport path.

10        26. The bulk paper feeding device with an intermediate conveyor as claimed in claim 21, further comprising unidirectional rotational driving force transmitting means provided to the shaft of the transport roller disposed at least on the furthest downstream side of the intermediate transport path.

15        27. The bulk paper feeding device with an intermediate conveyor as claimed in claim 26, further comprising braking force applying means for applying braking force to the transport roller disposed at least on the furthest downstream side of the intermediate transport path.

20        28. The bulk paper feeding device with an intermediate conveyor as claimed in claim 27, wherein the braking force is applied to the shaft of the transport roller or to the transport roller itself on

the side to which rotational driving force is transmitted via the unidirectional rotational driving force transmitting means.

29. The bulk paper feeding device with an  
5 intermediate conveyor as claimed in claim 27, wherein  
the braking force is set to a level that increases  
toward the main paper feeding means.

30. The bulk paper feeding device with an  
intermediate conveyor as claimed in claim 11, wherein  
10 the image forming device is a stencil printer which  
has a printing drum for winding a thermal stencil  
master produced by engraving, and whereby paper that  
has been fed from the intermediate conveyor is pressed  
against the thermal stencil master on the printing  
15 drum and printed by the feeding of ink from the  
interior of the printing drum.

31. A bulk paper feeding device with an  
intermediate conveyor, comprising:

a carrier capable of carrying a large quantity of  
20 paper;

a paper feeding mechanism for picking up and  
feeding one sheet at a time of the paper from the  
carrier; and

an intermediate conveyor for transporting a sheet  
25 of paper fed from the feeding mechanism to a main

paper feeding table of a paper feeder on the body of an image forming device or to the vicinity of a paper feeding port that faces main paper feeding means of the paper feeder;

5       at least one of paper length detecting means for detecting paper length, and paper presence detecting means for detecting the presence or absence of paper on the main feeding table, which are provided on the main feeding table; and

10       a shutter mechanism, provided to the intermediate conveyor, for selectively shielding at least one of the paper presence detecting means and the paper length detecting means.

32. The bulk paper feeding device with an  
15 intermediate conveyor as claimed in claim 31, wherein  
the paper presence detecting means is caused to switch  
on/off signals thereof by a closing and opening  
operation.

33. The bulk paper feeding device with an  
20 intermediate conveyor as claimed in claim 31, further  
comprising control means for controlling the operation  
of the shutter mechanism based on the signals from the  
paper presence detecting means and paper detecting  
means, wherein the control means is disposed on the

side of the bulk paper feeding device with an intermediate conveyor.

34. The bulk paper feeding device with an intermediate conveyor as claimed in claim 33, wherein  
5 the shutter mechanism comprises a shielding member for selectively shielding the detecting means, and shield driving means for driving the shielding member.

35. The bulk paper feeding device with an intermediate conveyor as claimed in claim 31, wherein  
10 the bulk paper feeding device with an intermediate conveyor can move between a connected position in which paper that is fed from the intermediate conveyor can be taken in and fed by the main feeding means, and an unconnected position that is spaced apart from the  
15 connected position in a state in which the intermediate conveyor is placed on the main feeding table retained at a prescribed height, and wherein the intermediate conveyor is placed on the main feeding table via the shutter mechanism.